

**SUPPLEMENTAL REISSUE APPLICATION DECLARATION  
AND POWER OF ATTORNEY**

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, I believe I am the original, first and sole inventor of the subject matter which is described and claimed in letters patent number 5,302,966 entitled ACTIVE MATRIX ELECTROLUMINESCENT DISPLAY AND METHOD OF OPERATION and granted on APRIL 12, 1994 and for which invention I now solicit a reissue patent, the specification for which:

\_\_\_ is attached hereto.

X was filed on May 23, 1995 as  
Application Serial No. 08/447,717  
with amendment(s) filed herewith.

**ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR**

I hereby state that I have reviewed and understand the contents of the above-identified specification including the claims, as amended by any amendments referred to above.

I acknowledge the duty to disclose information which is material to the examination of this reissue application in accordance with Title 37, Code of Federal Regulations section 1.56 (a).

**PRIORITY CLAIM**

I hereby claim foreign priority benefits under Section 119 of Title 35, United States Code for the above-identified reissue patent application based on the foreign application(s) for patent or inventor's certificate identified below and having a filing date before that of the application on which priority is claimed:

<u>Application No</u>	<u>Country</u>	<u>Filing Date</u>	<u>Priority Claimed</u> <u>under 35 USC 119</u>
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**NONE**

**STATEMENT OF INOPERATIVENESS OR INVALIDITY OF  
ORIGINAL PATENT UNDER 37 CFR 1.175**

I believe that the original patent identified above is partly invalid by reason of the patentee claiming less than he had a right to claim through error that arose without any deceptive intention on the part of the applicant.

The present claims, claims 1-7 of the subject patent

5,302,966, are narrowly drafted to specifically claim a single arrangement of components within a pixel of an electroluminescent display. Although this specific arrangement of components is useful in providing gray scale illumination of a pixel in an electroluminescent display, I believe that, in view of the prior art, I am entitled to broader claim coverage including (1) a method of providing gray scale illumination for a pixel of an electroluminescent display, (2) apparatus for implementing the method using an analog data signal, (3) apparatus for implementing the method using a digital data signal, and (4) a unique arrangement of pixel components useful in attaining gray scale illumination of a pixel. Thus, the error in the issued patent is that the claimed invention is limited to a particular arrangement of components (transistors) within a pixel of an electroluminescent display.

These omissions arose at the time the application was prepared and continued during prosecution of the application because, on information and belief, that my former United States attorney and I did not realize the possible breadth of the protection to which the invention was entitled. Specifically, at the time of execution of the original application, I misjudged the scope the claims could have in view of the known prior art. As a result, my former attorney only prosecuted claims to one specific control circuit transistor structure without claiming a broad method of attaining gray scale illumination of an electroluminescent cell and without claiming a second embodiment of the control circuit. In short, as a result of my misjudgment regarding the scope of my invention that could be patented, my previous attorney did not understand the scope of the invention and inadvertently limited the claims to a specific control circuit structure. In his haste to achieve issuance, I was not consulted by my previous attorney before he completed prosecution of the original application.

On information and belief, the errors did not become apparent until after review of the issued patent was undertaken for purposes of determining whether the claims accurately reflect the scope of the invention. The possibility of an error was originally discovered, on or about December 10, 1994, when I was reviewing the patent with a view towards licensing the patent. During this review, I discovered that the claims did not recite an appropriately broad method of operation nor the second embodiment of the control circuit. The breadth of the patent was then reviewed, on or about December 15, 1994, by Raymond R. Moser, Esq. and Dr. William Burke, Esq. They concluded that I had claimed less than I had a right to claim.

As a result of this review by Mr. Moser and Dr. Burke, it was concluded that the subject patent is defective. In response, applicant's assignee authorized the law firm of Thomason & Moser to prepare and file a reissue application for the subject patent including broadened claims commensurate with the scope of the disclosed invention.

Through error, I failed to present claims in the subject patent 5,302,966 that are now contained in the Reissue Application. This error arose without deceptive intent on my part. In view of the inadvertent nature of the error, I believe that I am entitled to broader claim coverage, as discussed below, including (1) a method of providing gray scale illumination for a pixel of an electroluminescent display, (2) apparatus for implementing the method using an analog data signal, (3) apparatus for implementing the method using a digital data signal, and (4) a unique arrangement of pixel components useful in attaining gray scale illumination of a pixel.

Specifically, independent claim 1 of the issued patent recites an apparatus containing two transistors where the first transistor has a gate connected to a select line, a source connected to a data line, and a drain connected to the gate of the second transistor. The second transistor has a source connected to a data line and a drain connected to a first electrode of an electroluminescent cell. A second electrode of the electroluminescent cell is connected to a power supply. The dependent claims further define specific elements of claim 1 including specifically defining the components of the power supply (claims 2 and 3), defining the second transistor as a MOS transistor (claim 3) and reciting a capacitor that is attached to the gate of the second transistor (claims 5 and 6). Independent claim 7 recites a method of operation for the specific apparatus recited in claim 1. In particular, the preamble of claim 7 recites the apparatus of claim 1, as stated above, and the body of the claim recites applying a voltage to the data and select lines, applying power to the electroluminescent cell, and disabling the second transistor after a period of time. As such, the EL cell is illuminated for a period of time.

In contrast to the present claims of the issued patent, the new claims recite a method and apparatus of illuminating an EL cell using analog and digital signals regardless of the specific arrangement of transistors that drive the cell. Thus, the defect in the original patent is corrected by the new claims.

Specifically, the error in the issued patent includes an omission of certain claims to a method for providing gray scale illumination for an electroluminescent display using either analog or digital data signals. In particular, the applicant's specification discloses on page 1, lines 13-57, a method that subdivides a frame period into a plurality of LOAD and ILLUMINATE periods, where each LOAD period is followed by an ILLUMINATE period. During each LOAD period, data is stored in a circuit within each pixel and, during each ILLUMINATE period, a current is applied to the circuit and to the electroluminescent cell. In response to the applied current and the stored data signal, the electroluminescent cell is selectively illuminated. The gray scale illumination is accomplished either by using analog or digital data signals. This omitted method of the invention is now claimed in new claims 8-13 of the Reissue Application.

In particular, claim 8 of the Reissue Application recites:

"In an electroluminescent display comprising an array of pixels, where each pixel contains a circuit for controlling application of energy to an electroluminescent cell associated with each pixel in said array of pixels, a method of providing gray scale illumination during a frame period comprising the steps of:

dividing said frame period into a plurality of LOAD periods and a plurality of ILLUMINATE periods, where each LOAD period is followed by an ILLUMINATE period;

applying, during each of said LOAD periods, a data signal to said circuit along a data line and applying a select signal to said circuit along a select line;

storing, during each of said LOAD periods, said data line signal within said circuit; and

applying, during each of said ILLUMINATE periods, a current to said electroluminescent cell and said circuit, where said electroluminescent cell is selectively illuminated in response to said current and said stored data line signal."

The scope of claim 8 (as well as its dependent claims 9-13 which recite various types of data signals, analog, digital, stepped, etc.) differs substantially from that of claims 1-7 of the issued patent. In particular, the issued claims are limited to a specific circuit arrangement (as defined above) for driving an EL cell and do not recite a frame period that is divided in plurality of LOAD and ILLUMINATE periods, while the new claims recite a method of illuminating a cell regardless of the circuitry used to drive the cell.

Further, the error includes an omission of certain claims to apparatus for implementing the method for providing gray scale illumination for an electroluminescent display using an analog data signal. Such apparatus is disclosed on page 3, line 57 through page 4, line 11 of the applicant's specification. This apparatus is embodied in a pixel design within an electroluminescent display. Specifically, a pixel within the display comprises a first transistor, a second transistor, a power supply, and an electroluminescent cell. The first and second transistors are interconnected as follows:

the first transistor having a first transistor gate, a first transistor source and a first transistor drain, where the first transistor gate is connected to a select line, the first transistor source is connected to a data line and the first transistor drain is connected to a second transistor gate of the second transistor;

the second transistor having the second transistor gate, a second transistor source and a second transistor drain, where the second transistor source is connected to the data

line and the second transistor drain is connected to an electroluminescent cell.

During a LOAD period and when a select line signal on the select line activates the first transistor, the data line supplies, through the first transistor, a data signal to the second transistor gate where the data signal is stored. Thereafter, during an ILLUMINATE period, the data line supplies an analog gray scale control signal (typically a ramp signal) to the second transistor such that when the data signal stored at the second transistor gate exceeds the gray scale control signal on the data line, the second transistor applies energy from a power supply to the electroluminescent cell. In this manner, the gray scale control signal as compared to the stored analog data signal determines an amount of time during a frame period that a pixel is illuminated. This apparatus is now specifically recited in claims 14-19 in the Reissue Application.

In contrast, the presently issued claims (1-7) recite the same specific transistor circuitry that is recited in the new claims (14-19, as amended), but the issued claims do not recite the limitation of producing the gray scale illumination by using analog signals nor by using a frame period that is divided into a plurality of LOAD periods and a plurality of ILLUMINATE periods. Specifically, new claim 14 recites:

"An electroluminescent display comprising an array of pixels for providing gray scale illumination during a frame period, where said frame period is divided into a plurality of LOAD periods and a plurality of ILLUMINATE periods, where each LOAD period is followed by an ILLUMINATE period, each pixel comprising:

a first transistor and a second transistor;

said first transistor having a first transistor gate, a first transistor source and a first transistor drain, where said first transistor gate is connected to a select line, said first transistor source is connected to a data line and said first transistor drain is connected to a second transistor gate of said second transistor;

said second transistor having said second transistor gate, a second transistor source and a second transistor drain, where said second transistor source is connected to said data line and second transistor drain is connected to an electroluminescent cell;

during each of said LOAD periods and when a select line signal on the select line activates the first transistor, said data line supplies, through said first transistor, a data signal to the second transistor gate where said data signal is stored; and

during each of said ILLUMINATE periods, said data line supplies a gray scale control signal to said second transistor, when said data signal stored at said second transistor gate exceeds the gray scale control signal on said

data line, said second transistor applies energy from a power supply to said electroluminescent cell."

By adding this particular recitation of signal flow to independent claim 14, new claims 14-19 are narrower in scope than the issued claims 1-7.

Also, the error includes an omission of certain claims to apparatus for implementing the method for providing gray scale illumination for an electroluminescent display using a digital data signal. Such apparatus is disclosed on page 4, lines 12-58 of the applicant's specification. This apparatus is embodied in a pixel within an electroluminescent display. Specifically, a control circuit is connected to a data line, a select line, and an electrode of an electroluminescent cell. During a LOAD period and when a select line signal on the select line activates the control circuit, a data signal supplied by the data line is stored within the circuit. Subsequently, during an ILLUMINATE period, the control signal, in response to the state of the data signal, applies pulsed energy to the electroluminescent cell for a particular period of time. This apparatus is now specifically recited in claims 20-29 in the Reissue Application.

The presently issued claims (1-7) recite a specific transistor circuit for illuminating an EL cell. In contrast, new claims 20-29 recite an electroluminescent display having a "control circuit" for selectively applying energy to an electroluminescent cell, while the previous claims only recite a specific pixel structure having a specific control circuit structure. Specifically, the new claim 20 recites:

"An electroluminescent display comprising an array of pixels for providing gray scale illumination during a frame period, where said frame period is divided into a plurality of LOAD periods and a plurality of ILLUMINATE periods, where each LOAD period is followed by an ILLUMINATE period, each pixel comprising:

a control circuit, connected to a select line, a data line and a first electrode of an electroluminescent cell, for selectively applying energy to said electroluminescent cell in response to signals carried by said select line and said data line;

during each of said LOAD periods and when a select line signal on the select line activates the control circuit, said data line supplies a data signal to the control circuit where said data signal is stored; and

during each of said ILLUMINATE periods, in response to a state of said stored data signal, said control circuit applies pulsed energy from a power supply means to a second electrode of said electroluminescent cell for a particular period of time."

As such, new claims 20-29 have a substantially different scope

than original claims 1-7.

Lastly, the error includes an omission of certain claims to apparatus of a second embodiment of a pixel disclosed on page 4, line 59 et seq. and shown in FIG. 3 of the reissue specification. Specifically, independent claim 1 of the issued patent recites an apparatus containing two transistors where the first transistor has a gate connected to a select line, a source connected to a data line, and a drain connected to the gate of the second transistor. The second transistor has a source connected to a data line and a drain connected to a first electrode of an electroluminescent cell. A second electrode of the electroluminescent cell is connected to a power supply. In contrast, new claim 30, as amended, recites:

"An electroluminescent display comprising an array of pixels, each pixel comprising:

a first transistor, a second transistor and an electroluminescent cell;

said first transistor having a first transistor gate connected to a select line, a first transistor source connected to a data line, and a first transistor drain connected to connected to a second transistor gate of said second transistor;

said second transistor having a second transistor source connected to said select line and a second transistor drain coupled to a first electrode of said electroluminescent cell; and

said electroluminescent cell having a second electrode coupled to means for providing an alternating current to the electroluminescent cell."

The difference is that the new claim has a different arrangement of the transistors, i.e., a second embodiment of the pixel, that was never claimed in the original application. In particular, the new claim recites that the source of the second transistor is connected to the select line. In claim 1 of the issued patent the source of the second transistor is recited as being connected to the data line. In addition, new dependent claims 31 and 32 recite the connection of certain capacitors into the circuit recited in new claim 30.

In view of the inadvertent nature of the error, I believe that I am entitled to broader claim coverage, as discussed above, including (1) a method of providing gray scale illumination for a pixel of an electroluminescent display, (2) apparatus for implementing the method using an analog data signal, (3) apparatus for implementing the method using a digital data signal, and (4) a unique arrangement of pixel components useful in attaining gray scale illumination of a pixel.

POWER OF ATTORNEY

As a named inventor, I hereby appoint:

Charles L. Thomason (Reg. No. 31,431) and  
Raymond R. Moser Jr. (Reg. No. 34,682)

as my attorneys to prosecute this application and to transact all business in the United States Patent and Trademark Office in connection therewith.


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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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